



DUPLICATE

CASE NO. NJDE981876642

**SUPPLEMENTAL GROUND WATER REMEDIAL  
INVESTIGATION REPORT  
ARSENIC AREA**

**FORMER CELOTEX INDUSTRIAL PARK  
EDGEWATER, NEW JERSEY**

**TRC RAVIV JOB NO. 01C2084**

Prepared for:

Edgewater Enterprises, LLC  
525 River Road  
Edgewater, New Jersey 07020

Attention: Mr. Gene Heller

Prepared by:

TRC Raviv Associates, Inc.  
57 East Willow Street  
Millburn, New Jersey 07041

May 9, 2005

**TRC Raviv Associates, Inc.**

57 E. Willow Street  
Millburn, New Jersey 07041-1497  
Telephone 973-564-6006  
Facsimile 973-564-6442

May 9, 2005

DUPLICATE

New Jersey Department of Environmental Protection  
Office of Brownfield Reuse  
401 East State Street  
P.O. Box 028  
Trenton, NJ 08625-0028

Attention: Mr. Stephen Kehayes, Case Manager

Re: *Supplemental Ground Water Remedial Investigation Report, Arsenic Area*  
Former Celotex Site  
Edgewater, New Jersey  
DRAI Job No. 01C2084

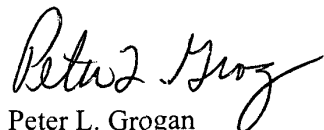
Dear Mr. Kehayes:

On behalf Edgewater Enterprises, TRC Raviv Associates, Inc. (TRC Raviv) has enclosed one original and two copies of the *Supplemental Ground Water Remedial Investigation Report, Arsenic Area* for the above-referenced site. The laboratory QA/QC data packages and electronic formatted disks for this report are also being provided.

If you have any questions or need additional information, please call.

Very truly yours,

TRC RAVIV ASSOCIATES, INC.



Peter L. Grogan  
Project Manager



Daniel A. Nachman  
Senior Project Manager

c: Richard LaBarbiera, Edgewater Enterprises  
Mr. Richard Ho, USEPA  
Robert Crespi, Esq., Wolff & Samson

2084/l/sgwrircovlet050505

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**SUPPLEMENTAL GROUND WATER REMEDIAL INVESTIGATION REPORT  
ARSENIC AREA**

**FORMER CELOTEX INDUSTRIAL PARK  
EDGEWATER, NEW JERSEY**

**1.0 INTRODUCTION**

On behalf of Edgewater Enterprises, LLC (Edgewater), TRC Raviv Associates, Inc. (TRC Raviv) has prepared the following *Supplemental Ground Water Remedial Investigation (RI) Report, Arsenic Area*, for the former Celotex Industrial Park (Site), located in Edgewater, New Jersey (Figure 1). The Site is being investigated pursuant to an Administrative Consent Order (ACO) entered into by Edgewater and the New Jersey Department of Environmental Protection (NJDEP) in April 1999 and amended in June 2002.

On July 9, 2004, TRC Raviv submitted a report to the NJDEP entitled *Ground Water Remedial Investigation Report (RIR), Arsenic Area*. The Ground Water RI was conducted in accordance with a RI Workplan approval by the NJDEP on December 11, 2002. The report provided a comprehensive evaluation of hydrogeologic conditions and ground water quality from 20 monitoring wells located across the Site. Based on the sampling results, the primary contaminant of concern (COC) above applicable Ground Water Quality Standards (GWQS, N.J.A.C. 7:9-6) at the Site is arsenic, and to a lesser extent lead.

As previously established, the High Concentration Arsenic Area is defined as the area on-site with arsenic concentrations in soil greater than 1,000 parts per million (ppm). A significant finding of the Ground Water RIR is that arsenic in soil and ground water within the High Concentration Arsenic Area are in equilibrium, and high concentrations of dissolved arsenic in ground water in the core of the High Concentration Arsenic Area are not migrating with ground water flow. In and near the High Concentration Arsenic Area, the ground water is under generally oxidizing conditions; under oxidizing conditions, arsenic is less soluble and forms precipitates, particularly with the high iron content fill materials under the site. Monitoring wells located a relatively short distance downgradient from the High Concentration Arsenic Area show significantly lower arsenic concentrations. Figure 2 presents arsenic isoconcentrations at the Site in ground water samples collected in February 2004 (previously presented as Figure 16 in TRC Raviv's July 2004 Ground Water RIR).

The February 2004 sampling results indicated that a separate zone of high arsenic concentrations in ground water (monitoring wells C and F) occurs near the Hudson River. Ground water near the shoreline is under relatively reducing conditions, at least in part due to the presence of coal tar (which increases microbial growth and decreases oxygen concentrations) which has emanated onto the Celotex site from the adjacent Quanta Superfund Site (Quanta) to the south. Under reducing conditions, previously existing arsenic is more soluble. There appears to be sufficient arsenic in the soil along the shoreline to act as a source of dissolved arsenic. The reducing geochemical conditions near the shoreline may be a relatively recent phenomenon, since previously existing monitoring wells near the shore (monitoring well MW-2 near MW-C and MW-19 near MW-F) showed much lower concentrations in 2001.

Based on these findings, it was determined that high arsenic concentrations in ground water within the High Concentration Arsenic Area are not migrating any significant distance, and are not a source of impacts observed in monitoring wells located near the Hudson River shoreline. The High Concentration Arsenic Area is not affecting any other off-site receptors.

A meeting was held in the NJDEP offices on January 25, 2005 between representatives of the NJDEP, TRC Raviv, Environmental Waste Management Associates (EWMA) and Edgewater to discuss the findings of the July 2004 Ground Water RIR. The NJDEP agreed that the July 2004 Ground Water RIR demonstrated that the high dissolved arsenic concentrations under the High Concentration Arsenic Area are not migrating to downgradient wells, with the possible exception of the area between monitoring wells MW-B and MW-C. The NJDEP expressed concerns that: 1) the vertical extent of high dissolved arsenic concentrations were not delineated in the High Concentration Arsenic Area, and 2) that an additional shallow monitoring well was needed to prove the lack of connection at one location (the area between wells MW-B and MW-C) between the high arsenic concentrations in ground water in the High Concentration Arsenic Area and the high concentrations near the shoreline.

On February 8, 2005, representatives of the NJDEP, TRC Raviv and Edgewater met at the site and agreed on the locations of the two new monitoring wells. It was further agreed that following installation of the two new wells, two rounds (at least 30 days apart) of ground water samples would be collected from the new wells and a select group of nearby existing wells for analysis of arsenic and lead.

This report summarizes the installation of two new monitoring wells, describes the collection of water-level measurements and ground water samples, and provides an evaluation of ground water sampling results. Activities have been performed to comply with Item 12 of the ACO Amendment, and in compliance with the NJDEP Technical Requirements for Site Remediation (TRSR, N.J.A.C. 7:26E).

## 2.0 INVESTIGATION METHODOLOGY

### 2.1 Monitoring Well Installation

Two new monitoring wells (MW-O and MW-N-3) were installed in February – March 2005 by Summit Drilling Co., Inc. of Bound Brook, New Jersey, a New Jersey-licensed well driller, under the supervision of a TRC Raviv geologist. Well MW-O is a shallow monitoring well screened across the water table, and is located in close proximity to the limits of the coal tar as defined by EWMA (Figure 3); Well MW-N-3 is a deep double-cased monitoring well installed within the High Concentration Arsenic Area, with an open borehole in bedrock. Well construction details are presented in Table I and monitoring well logs are included in Appendix A. A geologic cross section showing the new and several existing wells is provided on Figure 4.

Monitoring well MW-O was installed using the air rotary drilling method. Continuous 2-inch split spoons were collected to determine the appropriate screen interval. The well was constructed with 4-inch, schedule 40 PVC casing and 4-inch, 0.008-inch slot PVC well screen set into fill material. The annulus surrounding the well screen was filled with a No. 0 sand pack. Above the sand pack, cement grout was installed to ground level using the tremie method. At ground surface, the well was completed as a flushmount with a protective cover and locking compression cap.

For deep monitoring well MW-N-3, the mud rotary drilling method was used to drill a 14-inch diameter hole and install a 10-inch diameter casing, which was tremie grouted into a stiff clay at about 30 feet bg. Since the subsurface lithology of nearby monitoring wells (MW-N-1 and N-2) was known, split spoon sampling was initiated at a depth of 24 feet bg and continued until bedrock was encountered at 36 feet bg. Following placement of the 10-inch diameter casing, the deeper drilling was advanced using the air rotary method. A 10-inch diameter hole was advanced to 50 feet bg, and a second 6-inch diameter steel casing was tremie grouted into competent bedrock at a depth of 50 feet bg. Following grouting of the 6-inch steel casing, a 6-inch open borehole was extended from 50 to 60 feet bg in bedrock. The well was completed as a flushmount, with a protective cover and locking compression cap.

Well development was conducted using air at monitoring MW-N-3 and a submersible pump at monitoring well MW-O. The wells were developed to remove the fines from the borehole and restore the hydraulic properties of the surrounding formation. Sustainable ground water pumping rates were estimated at 1 gallon per minute (gpm) and 1.5 gpm during development of wells MW-O and MW-N-3, respectively.

A New Jersey-licensed surveyor, McCutcheon Associates, P.A. of Secaucus, New Jersey, surveyed the existing and new monitoring wells. Monitoring well certification Form As (as-built certification) and Form Bs (location certification) are presented in Appendix B.

### 2.2 Water-Level Measurements

Water-level measurements were collected in March and April 2005. Water levels were measured in all on-site and off-site monitoring wells using an electronic water-level meter and an oil/water interface meter (Table II). No measurable product was detected in any of the wells during either sampling events.

### 2.3 Ground Water Sampling

Two rounds of ground water samples were collected from the two new monitoring wells and three previously existing monitoring wells (wells MW-B, MW-C and MW-20) using the U.S. Environmental Protection Agency (USEPA) Region II low-flow sampling procedures. Sampling was performed in March and April 2005, with at least 30 days in between sampling events. The ground water samples were analyzed for arsenic and lead. Arsenic and lead samples for both "total" and "dissolved" (filtered in the field) were collected from each well.

Bladder pumps were used to conduct low-flow sampling at all monitoring wells. The intake of the pump at each well was positioned at the mid-point of the saturated screened interval, but not within 2 feet of the bottom of the well if possible. All monitoring wells met the drawdown requirement of 0.3 feet or less during purging.

Water quality readings, including dissolved oxygen (DO), oxidation-reduction potential (ORP), specific conductance, pH, temperature and turbidity were recorded approximately every 3 to 5 minutes using a calibrated Horiba U-22 water quality meter. Samples were collected from each well after three consecutive readings reached the stabilization requirements for each parameter (Table III). During both sampling events, all monitoring wells stabilized within 2 hours of purging.

The ground water samples were placed on ice in coolers immediately after sample collection and were delivered to Integrated Analytical Laboratories LLC (IAL), of Randolph, New Jersey, a NJDEP-certified laboratory, in accordance with chain of custody, sample preservation and holding time requirements.

### 3.0 HYDROGEOLOGIC CONDITIONS

#### 3.1 Ground Water Flow

On March 15 and April 18, 2005 water-level measurements were collected using an electronic product/water interface probe and water-level meter from new and existing monitoring wells (Table II). No product was encountered in any monitoring well.

The ground water flow direction is generally from west to east/northeast toward the Hudson River, consistent with previous water-level measurements (Figures 5 and 6). The top of the water table occurs within the lower, older fill unit across most of the Site. The hydraulic gradient across the Site is approximately 0.004 ft/ft, based on water-level measurements collected from both sampling events.

During the two monitoring events, the water-level elevations in monitoring well cluster N indicate a downward vertical component to ground water flow. In monitoring well pair A, the vertical component of ground water flow is slightly upward.

## 4.0 GROUND WATER QUALITY

As noted, ground water samples were analyzed for arsenic and lead. Ground water sampling data are provided on Table IV; the QA/QC laboratory data packages and electronic data submission (EDS) deliverables are provided under separate cover.

### 4.1 Arsenic Concentrations

Figures 7 and 8 provide arsenic isoconcentration contours for the five monitoring wells sampled during the March and April 2005 sampling events. For the remaining wells, the most recent data collected during February 2004 was utilized.

A comprehensive map providing arsenic sampling results from 1997 to 2005 is provided on Figure 9. It is noted that for several sampling rounds performed in 1998, conventional purge methods were utilized, which yielded elevated levels of arsenic associated with particulate matter in suspension rather than actual ground water conditions. Subsequent sampling using low flow methods resulted in a significant decrease in arsenic concentrations. For example, conventional sampling of former well MW-1 in November 1998 resulted in arsenic concentrations of 7,230 ppb. Subsequent low flow sampling in December 1999 detected 348 ppb in the well.

A review of the March and April 2005 sampling data indicates comparable results with previous sampling events. The dissolved arsenic concentrations decline rapidly in a downgradient direction of the High Concentration Arsenic Area (wells MW-B and MW-20) and are not connected to a separate zone of higher levels observed in monitoring well MW-C, located along the Hudson River shoreline. Based on previous soil sampling activities, there is sufficient arsenic in soil along the shoreline to act as a source of dissolved arsenic under the reducing conditions caused by the presence of coal tar in this area.

In the March 2005 sampling event, low arsenic concentrations were observed in newly installed monitoring well MW-O (21.5 ppb), significantly below concentrations observed in downgradient monitoring well MW-C (393 ppb). An increase in arsenic concentrations in well MW-O from the March to April 2005 (from 21.5 to 199 ppb) sampling events is associated with lower ORP values observed in April 2005 (See Section 4.3). The April 2005 arsenic concentration of 88 ppb in well MW-20, upgradient of well MW-O and closer to the High Concentration Arsenic Area, shows the lack of connection between the near-shore arsenic hot spot in ground water and the High Concentration Arsenic Area. Arsenic concentrations in well MW-C in April 2005 were 390 ppb.

No arsenic was detected above method detection limits in the March or April 2005 sampling of deep monitoring well MW-N-3.

Based on these findings, the bedrock ground water quality is not impacted by arsenic, and the vertical extent of arsenic exceedances in the High Concentration Arsenic Area has been delineated. As stated in the July 2004 Ground Water RIR, and as agreed to by the NJDEP in our January 2005 meeting, ground water containing elevated levels of dissolved arsenic within the High Concentration Arsenic Area is not a source of impacts to downgradient monitoring wells located near the Hudson River shoreline or any other off-site receptors. The arsenic ground water plume in the High Concentration Arsenic Area is stable, and migration of arsenic in

ground water is in a state of equilibrium. Therefore, RI activities associated with ground water at the Site are complete.

Unfiltered arsenic concentrations are generally similar to filtered arsenic concentrations, suggesting that the arsenic in the ground water is in a dissolved state.

#### 4.2 Lead Concentrations

A review of both rounds for lead analysis indicates only one slight exceedance (13.3 ppb in unfiltered sample collected from well MW-C in March 2005) above its respective GWQS of 10 ppb. No lead was detected in the filtered sample from well MW-C, indicating that lead in the unfiltered sample is not in a dissolved state, but rather results from very fine particulate matter suspended even when using the low flow sampling method. This difference between total and dissolved lead concentrations was also observed during the 2004 RI. For the April 2005 sampling event, all results (both filtered and unfiltered) were below method detection limits. These results confirm that lead represents a limited COC in ground water at the site.

#### 4.3 Variations in Indicator Parameters

Field parameters were collected for temperature, pH, conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity (Table III).

The ground water temperature for both events ranged from approximately 9.5 to 16.2°C. The pH values measured in ground water were generally within the NJDEP-established acceptable range (6.0 to 8.0 standard units [s.u.]) with a few exceptions. Conductivity ranged from 2.77 to 14.0 milliSiemens/centimeter (mS/cm) in March 2005 and 2.92 to 11.4 mS/cm in April 2005. Turbidity ranged from 1.3 to 24.5 Nephelometric Turbidity Units (NTU) in March 2005 and from 0 to 77.4 NTU in April 2005. DO values in ground water were generally at zero, with the exceptions of 0.98 ppm in monitoring well MW-N-3 in March 2005 and 3 ppm in monitoring well MW-20 in April 2005.

ORP (measured in millivolts) is an indicator of redox conditions. Higher ORP measurements represent more oxidizing conditions and lower ORP measurements indicate a more reducing environment. As noted in Section 1.0, reducing conditions due in part to the presence of coal tar (which increases microbial growth and decreases oxygen concentrations) results in a more soluble form of arsenic in ground water.

In March 2005, all ORP values (with the exception of downgradient well MW-C at -121 mv) were positive. In April 2005, negative ORP values were observed in both wells MW-C (-135 mv) and MW-O (-43 mv), with the remaining three wells having positive ORP values.

As noted in Section 4.1, higher concentrations of arsenic were observed in downgradient well MW-C located near the Hudson River as compared to upgradient monitoring wells. Furthermore, an increase in arsenic concentrations was observed in well MW-O from March to April 2005. These higher arsenic concentrations are associated with reducing conditions associated with microbial growth biodegradation occurring in an area containing coal tar, which results in a more soluble form of arsenic (i.e., higher concentrations) in ground water. Edgewater is not responsible for contamination associated with coal tar, which is migrating northward and eastward from the Quanta site onto the Celotex site.



## 5.0 CONCLUSIONS

1. The vertical extent of arsenic exceedances in ground water within the High Concentration Arsenic Area has been delineated. Two rounds of sampling from deep well MW-N-3 did not detect any arsenic concentrations in bedrock ground water above method detection limits.
2. The installation of monitoring well MW-O downgradient of the High Concentration Arsenic Area and upgradient of well MW-C confirms that ground water containing elevated arsenic levels from the High Concentration Arsenic Area is not the source of the high arsenic concentrations detected near the shoreline. The dissolved arsenic is oxidized and sorbed immediately downgradient of the High Concentration Arsenic Area. These conditions are stable and are at equilibrium. Therefore, RI activities associated with ground water at the Site are complete, and there is no need for any remedial measure for ground water beneath the High Concentration Arsenic Area. The areal extent of ground water impacted with arsenic at the Site above its respective GWQS is estimated at approximately 481,700 square feet (see Figure 10).
3. The strip of land along the shoreline of the Hudson River is under relatively reducing conditions, due at least in part to the presence of coal tar emanating from the adjacent Quanta site; the hydrocarbons in the coal tar have stimulated biodegradation, which has consumed available oxygen. Furthermore, there is sufficient arsenic in soil in this area to act as a source of dissolved arsenic. Since the high dissolved arsenic concentrations in wells near the Hudson River are due in part to the presence of coal tar and the associated plume which has emanated onto the Celotex site from the adjacent Quanta site, any remedial decision making for this area should be part of the Quanta CERCLA RI/FS process.
4. Analysis for lead in the five monitoring wells sampled indicated only one sample (MW-C) in March 2005 slightly above its respective GWQS. Analysis of the filtered sample was non-detect. The same well had no detectable lead in April 2005. Lead represents a limited COC in ground water at the Site.

## **6.0 RECOMMENDATIONS**

No remedial measures are warranted for the High Concentration Arsenic Area. High dissolved arsenic concentrations under this area migrate a limited distance downgradient due to arsenic immobilization mechanisms in the subsurface. The vertical extent of arsenic exceedances in the High Concentration Area has been defined. The ground water under the High Concentration Arsenic Area is not impacting the Hudson River or any other off-site receptors.

## 7.0 REFERENCES CITED

EWMA, 2004, *Coal Tar Delineation Limits, Building 700 Area and South*, Former Celotex Industrial Park, Edgewater, NJ, April 28, 2004, Figure 1.

NJDEP, *Technical Requirements for Site Remediation*, N.J.A.C. 7:26E, *et seq.*

NJDEP, *Ground Water Quality Standards*, N.J.A.C. 7:9-6, *et seq.*

NJDEP, 1999, Administrative Consent Order, April 1999.

NJDEP, 2002a, Administrative Consent Order Amendment, June 2002.

NJDEP, 2002b, NJDEP Comments on June 2002 *Ground Water Remedial Investigation Workplan*, June 28, 2002.

NJDEP, 2002c, NJDEP Comments on July 2002 *Revised Ground Water Remedial Investigation Workplan*, September 27, 2002.

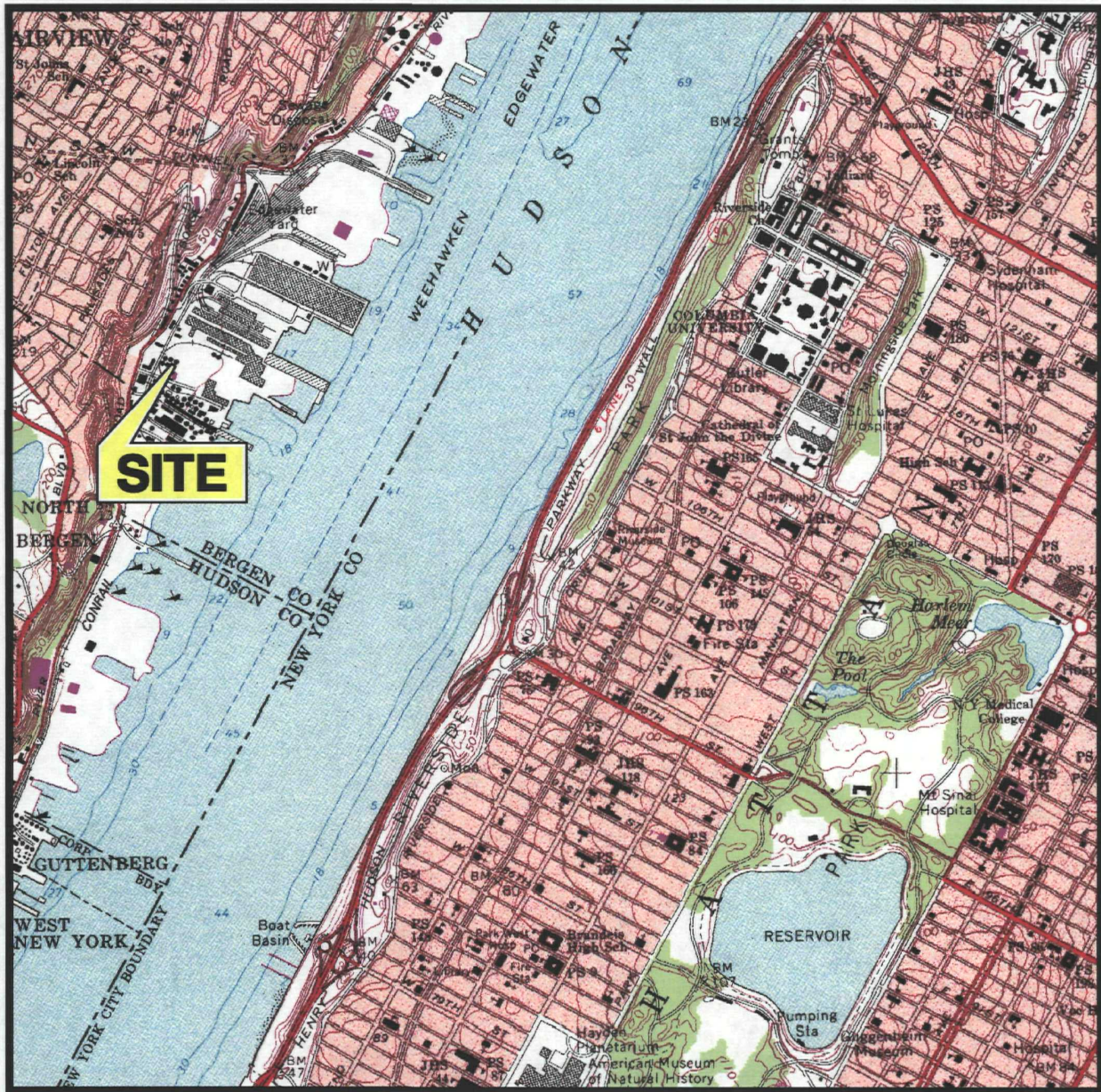
NJDEP, 2002d, NJDEP Approval of July 2002 *Revised Ground Water Remedial Investigation Workplan*, December 11, 2002.

TRC Raviv, 2002a, *Revised Ground Water Remedial Investigation Workplan*, Former Celotex Industrial Park, Edgewater, NJ, July 29, 2002.

TRC Raviv, 2002b, *Response to New Jersey Department of Environmental Protection (NJDEP) Comments – Ground Water Remedial Investigation Workplan*, Former Celotex Industrial Park, Edgewater, NJ, October 15, 2002.

TRC Raviv, 2004, *Ground Water Remedial Investigation Report, Arsenic Area*, Former Celotex Industrial Park, Edgewater, NJ, July 9, 2004.





CENTRAL PARK QUADRANGLE, N.Y.-N.J.

1966

PHOTOREVISED 1979

7.5 MINUTE SERIES (Topographic)



**TRC Raviv Associates, Inc.**

57 E. Willow Street Millburn, NJ 07041

#### SITE LOCATION

Former Celotex Industrial Park — Edgewater, NJ

PREPARED BY: RKH/ODL

DATE: MAY 2004

JOB NO.: 01C2084

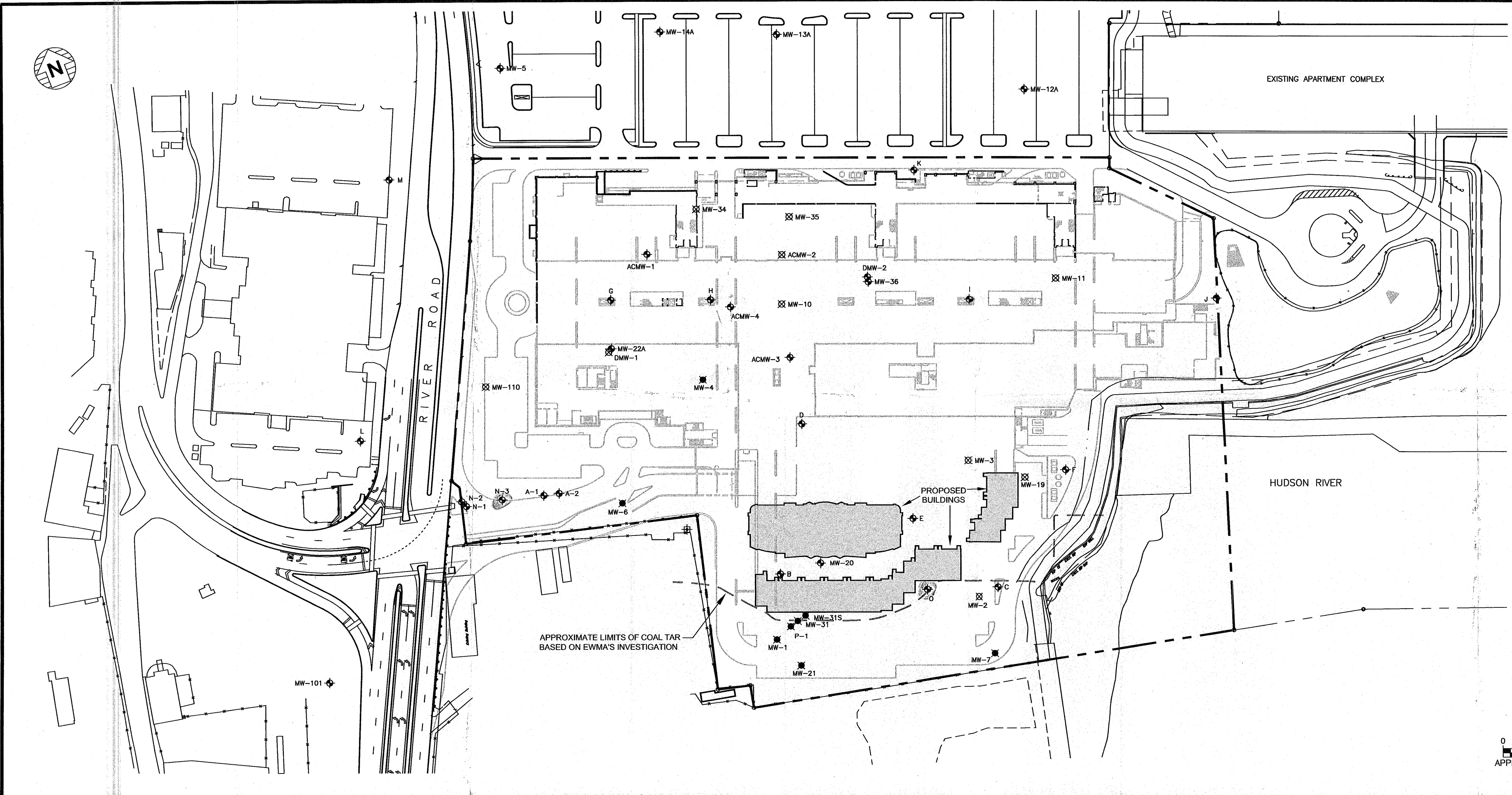
FIGURE: 1

2084SLM -05/05/04

305127







- EXPLANATION**
- SITE BOUNDARY
  - PROPOSED STRUCTURE FOOTPRINT
  - ⊕ EXISTING MONITORING WELL
  - ⊗ FORMER MONITORING WELL (MISSING)
  - ⊗ FORMER MONITORING WELL (SEALED)
  - ⊕ FORMER MONITORING WELL AT QUANTA SITE (SEALED)

**SOURCES:**

ENVIRONMENTAL WASTE MANAGEMENT ASSOCIATES, LLC, APRIL 2, 2002, FIGURE 1.

PROPOSED STRUCTURE LOCATIONS PROVIDED BY ENVIRONMENTAL WASTE MANAGEMENT ASSOCIATES, LLC, JUNE 2004, FIGURE 2, "MONITORING WELL LOCATIONS".

MELICK-TULLY AND ASSOCIATES, JUNE 19, 1999, PLATE 1 AND FIELD OBSERVATIONS BY DAN RAVIV ASSOCIATES, INC.

TRC RAVIV ASSOCIATES, INC. GROUND WATER REMEDIAL INVESTIGATION REPORT, ARSENIC AREA, JULY 9, 2004, FIGURE 2.

TRC RAVIV ASSOCIATES, INC. GROUND WATER REMEDIAL REPORT, FORMER ALL COUNTY ENVIRONMENTAL AREA, JANUARY 4, 2005, FIGURE 2.

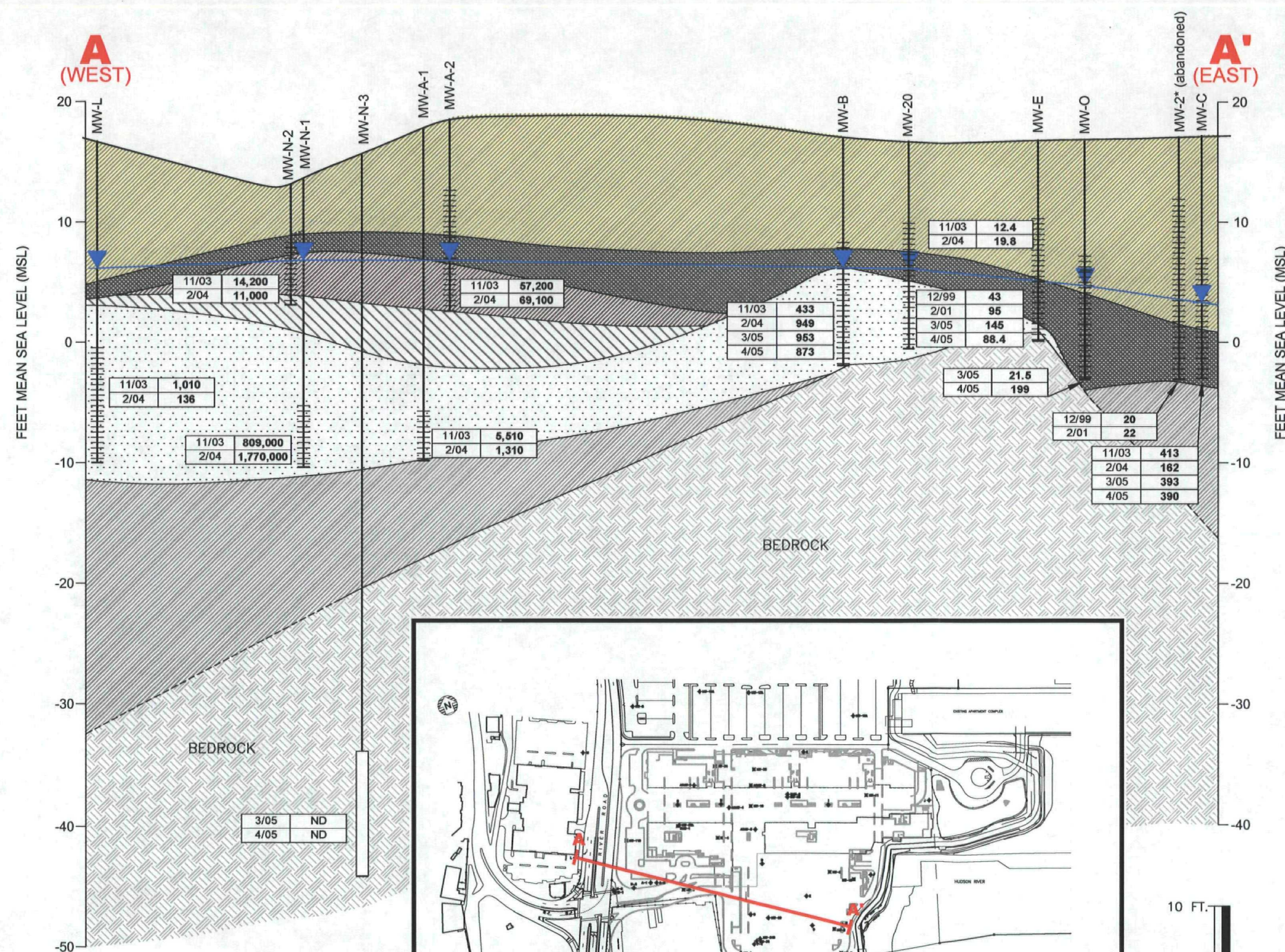


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MONITORING WELL LOCATIONS

FORMER CELOTEX INDUSTRIAL PARK — EDGEWATER, NJ	
PREPARED BY: MG/ODL	DATE: APRIL 2005
JOB NO.: 01C2084	FIGURE: 3





# EXPLANATION

- UPPER FILL: DARK BROWN FINE TO COARSE-GRAINED SAND AND SILT, SOME ROCKS, WOOD, BRICK AND CEMENT FRAGMENTS
- LOWER FILL: BLACK MEDIUM TO COARSE-GRAINED SAND AND SILT, SOME GRAVEL
- LOWER FILL: REDDISH PURPLE FINE TO COARSE-GRAINED SAND
- NATIVE: DARK BROWN/BLACK MEADOW MAT; SILT WITH MEADOW MAT ORGANIC MATTER
- NATIVE: RED/BROWN TO GRAY WELL SORTED FINE TO MEDIUM SAND
- NATIVE: RED BROWN/BROWN TO GRAY SILT, SOME FINE SAND
- NATIVE: RED BROWN TO GRAY SILTY CLAY TO CLAY

WATER TABLE (3/15/05)

MW-N-3  
MW-N-2

DATE SAMPLED  
ARSENIC (UNFILTERED) CONCENTRATION (ppb)

SCREENED INTERVAL OF MONITORING WELL

OPEN-HOLE INTERVAL OF MONITORING WELL

Notes:  
\* WELL LOG NOT AVAILABLE. ASSUMED MW-2 CONSTRUCTION SIMILAR TO MW-1.

GROUND WATER QUALITY STANDARD (GWQS) FOR ARSENIC = 8 ppb. CONCENTRATIONS ABOVE THE GWQS ARE BOLDED.

**TRC Raviv Associates, Inc.**  
57 E. Willow Street Millburn, NJ 07041

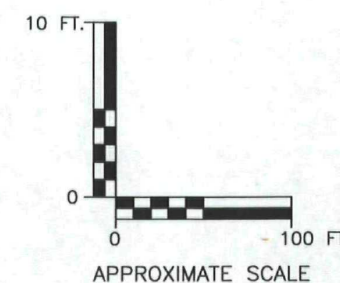
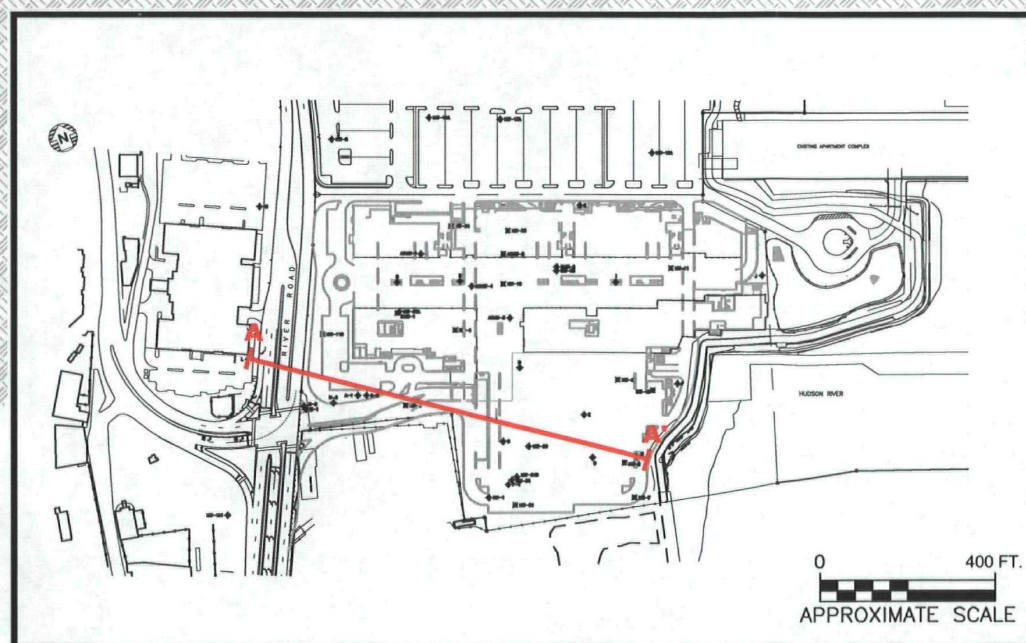
CROSS SECTION A - A'

Former Celotex Industrial Park - Edgewater, NJ

PREPARED BY: MG/ODL DATE: APRIL 2005

JOB NO.: 01C2084 FIGURE: 4

2084-SC1B -04/25/05

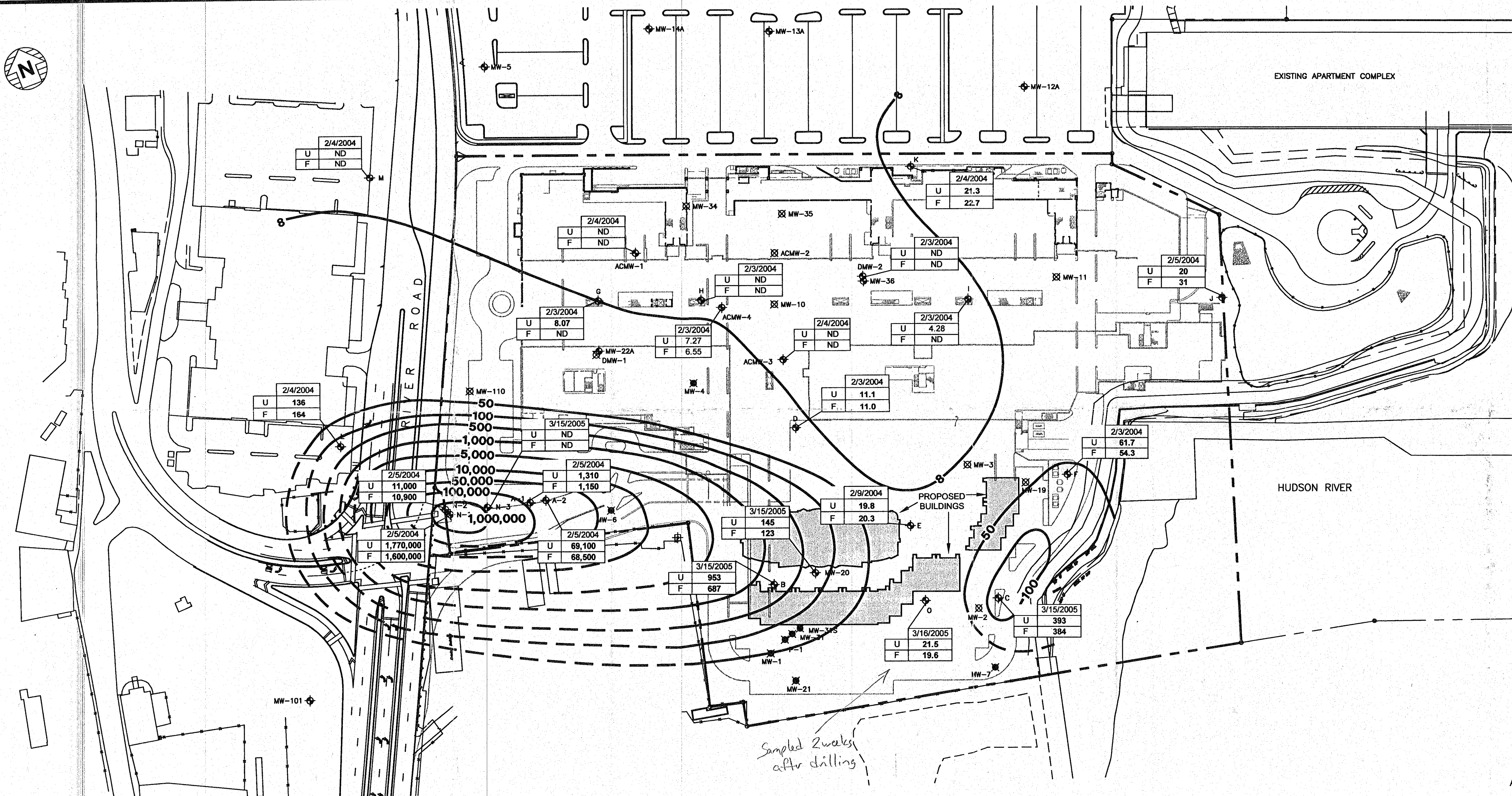












#### EXPLANATION

- SITE BOUNDARY
- PROPOSED STRUCTURE FOOTPRINT
- ⊕ EXISTING MONITORING WELL
- ⊗ FORMER MONITORING WELL (MISSING)
- ⊗ FORMER MONITORING WELL (SEALED)
- ⊕ FORMER MONITORING WELL AT QUANTA SITE (SEALED)
- 50 --- ARSENIC ISOCONCENTRATION IN GROUND WATER (ppb) DASHED WHERE INFERRED

Date Sampled	
2/5/2004	
U	1,310
F	1,150
Arsenic Concentration in parts per billion (ppb)	

#### Notes:

- 1) Ground Water Quality Standard for Arsenic = 8 ppb; Bold indicates concentration above the GWQS
- 2) The data from the last full round of ground water sampling (February 2004) were used for contouring those wells not sampled in March 2005.
- 2) For well clusters A & N, the higher concentration was used for contouring.
- 3) U = Unfiltered
- 4) F = Filtered
- 5) ND = Not Detected

### TRC Raviv Associates, Inc.

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ARSENIC ISOCONCENTRATIONS IN GROUND WATER  
MARCH 2005

FORMER CELOTEX INDUSTRIAL PARK - EDGEWATER, NJ

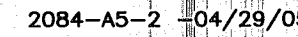
PREPARED BY: PG/LB

DATE: APRIL 2005

JOB NO.: 01C2084

FIGURE: 7

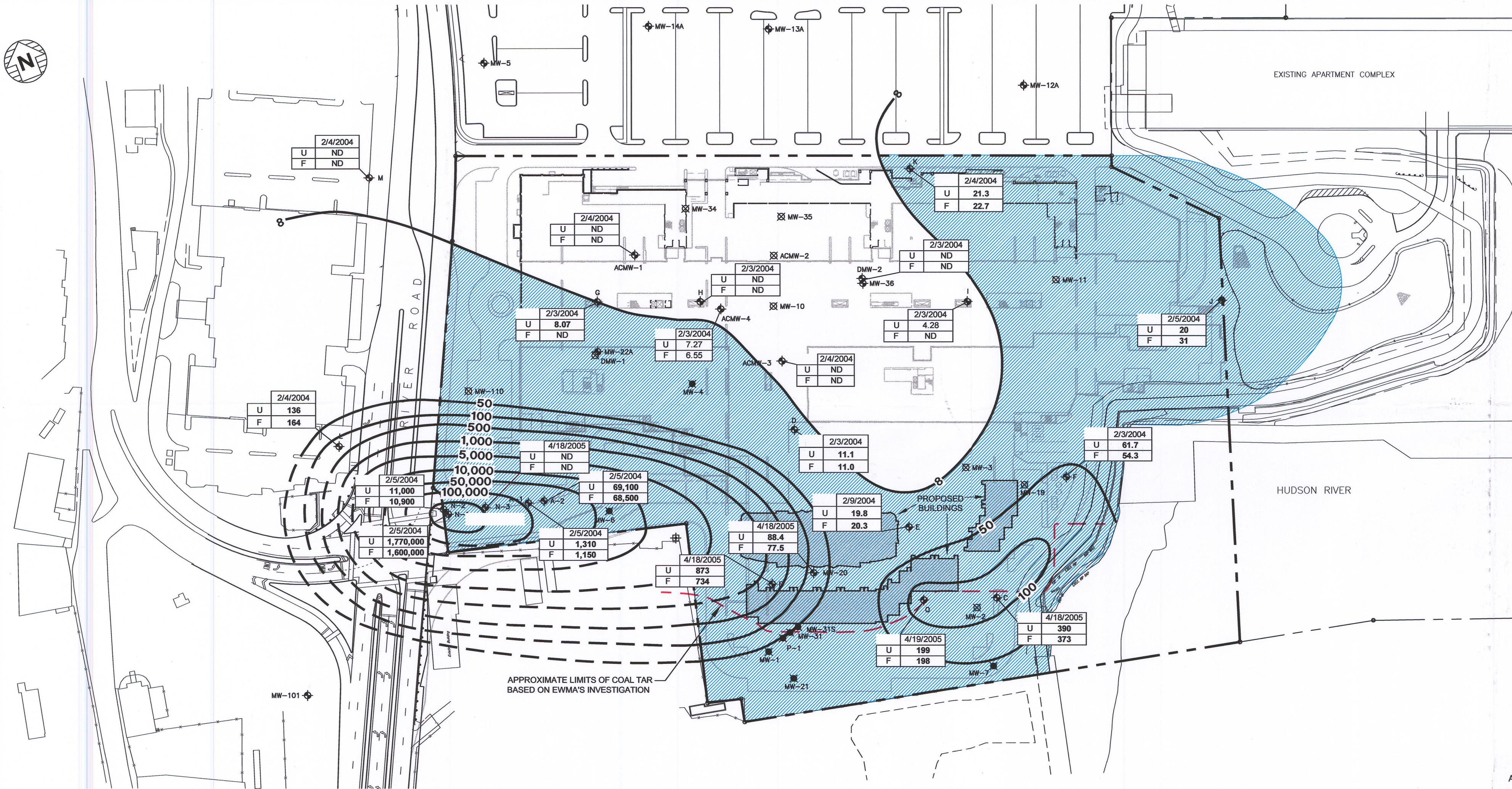












#### EXPLANATION

- SITE BOUNDARY
- PROPOSED STRUCTURE FOOTPRINT
- ⊕ EXISTING MONITORING WELL
- ⊗ FORMER MONITORING WELL (MISSING)
- ⊗ FORMER MONITORING WELL (SEALED)
- ⊕ FORMER MONITORING WELL AT QUANTA SITE (SEALED)
- 50 --- ARSENIC ISOCONCENTRATION IN GROUND WATER (ppb) DASHED WHERE INFERRED

Date Sampled	
2/5/2004	
U	1,310
F	1,150
Arsenic Concentration in parts per billion (ppb)	

#### Notes:

- 1) Ground Water Quality Standard for Arsenic = 8 ppb;  
Bold indicates concentration above the GWQS
- 2) The data from the last full round of ground water sampling (February 2004) were used for contouring those wells not sampled in April 2005.
- 2) For well clusters A & N, the higher concentration was used for contouring.
- 3) U = Unfiltered
- 4) F = Filtered
- 5) ND = Not Detected

■ EXTENT OF ARSENIC CONCENTRATIONS ABOVE 8 ppb AT CELOTEX SITE

### TRC Raviv Associates, Inc.

57 E. Willow Street Millburn, NJ 07041

AREAL EXTENT OF ARSENIC CONCENTRATIONS ABOVE GROUND WATER QUALITY STANDARD AT CELOTEX SITE

FORMER CELOTEX INDUSTRIAL PARK — EDGEWATER, NJ

PREPARED BY: PG/LB

DATE: APRIL 2005

JOB NO.: 01C2084

FIGURE: 10



## TABLES


**Table I**  
**Well Construction Details**  
**Celotex - Edgewater, New Jersey**

Well No.	Flushmount/ Stickup	Permit No.	Date Installed	Ground Surface Elevation (ft-msl)	TOC Elevation (ft-msl)	Total Depth (ft-bgs)	Screened Interval (ft-bgs)	Screen/Open- Hole Interval (feet)	Measured Total Depth (feet below TOC)
<b>Wells Installed by TRC Raviv:</b>									
MW-A-1	F	26-66219	10/8/2003	17.94	17.43	28.0	24.0-28.0	4	27.30
MW-A-2	F	26-66220	10/7/2003	18.94	18.66	16.0	6.0-16.0	10	16.52
MW-B	F	26-66221	10/6/2003	17.00	16.67	19.0	9.0-19.0	10	18.67
MW-C	F*	26-66222	10/7/2003	16.57	16.06	20.0	10.0-20.0	10	22.69
MW-D	F	26-66218	5/28/2003	16.90	16.55	11.0	6.0-11.0	5	12.65
MW-E	F	26-66204	5/30/2003	16.73	16.48	17.0	7.0-17.0	10	19.28
MW-F	F	26-66205	5/29/2003	13.16	12.58	17.0	7.0-17.0	10	17.29
MW-G	S	26-66206	6/2/2003	11.40	15.14	13.0	3.0-13.0	10	16.40
MW-H	S	26-66207	6/3/2003	15.30	19.36	14.0	4.0-14.0	10	17.70
MW-I	S	26-66208	6/4/2003	16.50	20.39	19.5	9.5-19.5	10	23.00
MW-J	S	26-66214	5/25/2003	16.60	17.54	18.0	8.0-18.0	10	21.53
MW-K	F	26-66215	5/23/2003	15.61	15.19	16.0	6.0-16.0	10	15.90
MW-L	F	26-69401	10/13/2003	16.79	16.38	27.0	17.0-27.0	10	22.91
MW-M	F	26-69402	10/10/2003	17.19	16.82	23.0	18.0-23.0	5	22.62
MW-N-1	F	26-67863	10/9/2003	13.90	13.33	24.25	19.25-24.25	5	23.45
MW-N-2	F	26-67862	10/8/2003	13.20	12.74	10.0	5.0-10.0	5	10.00
MW-N-3	F	26-74008	3/2/2005	15.19	14.68	60.0	50.0-60.0	10	59.30
MW-O	F	26-74023	2/28/2005	17.09	16.80	20.0	10.0-20.0	10	19.52
<b>Previously Installed Wells:</b>									
ACMW-1	F	26-62068	8/21/2001	13.35	12.56	17.0	2.0-17.0	15	19.97
ACMW-3	F	26-62070	8/21/2001	15.95	15.58	23.0	3.0-23.0	20	23
ACMW-4	F	26-62071	8/01	15.57	14.97	NA	NA	NA	14.88
DMW-2	F	26-60614	3/14/2001	16.30	15.40	31.0	21.0-31.0	10	23.76
MW-20	F*	26-48397	6/10/1998	16.78	16.34	17.0	7.0-17.0	10	21.71
MW-22A	F*	26-48399	6/11/1998	11.97	11.62	17.0	7.0-17.0	10	19
MW-36	F	26-51339	7/15/1998	16.20	15.42	16.5	6.5-16.5	10	17.22

\*Stickups cut down in 2004 and flushmounts installed. Re-surveyed 3/05.

NA = not available

Table II  
Ground Water Elevations  
March 15, 2005  
Celotex - Edgewater, New Jersey

Well No.	Top of Inner Casing Elevation (ft-msl)	Depth to Water from Top of Inner Casing (ft)	Depth to Product from Top of Inner Casing (ft)	Ground Water Elevation (ft-msl)	Product Elevation (ft-msl)	Product Thickness (ft)	PID Reading (ppm)
MW-A-1	17.43	10.64	ND	6.79	ND	ND	ND
MW-A-2	18.66	12.25	ND	6.41	ND	ND	ND
MW-B	16.67	10.25	ND	6.42	ND	ND	ND
MW-C	16.06	12.68	ND	3.38	ND	ND	1.2
MW-D	16.55	10.49	ND	6.06	ND	ND	ND
MW-E*	16.48	NA	ND	NA	NA	NA	NA
MW-F	12.58	10.10	ND	2.48	ND	ND	ND
MW-G	15.14	9.50	ND	5.64	ND	ND	ND
MW-H	19.36	13.28	ND	6.08	ND	ND	ND
MW-I	20.39	17.08	ND	3.31	ND	ND	ND
MW-J	17.54	14.30	ND	3.24	ND	ND	2.0
MW-K	15.19	11.40	ND	3.79	ND	ND	ND
MW-L	16.38	9.48	ND	6.90	ND	ND	ND
MW-M	16.82	10.62	ND	6.20	ND	ND	ND
MW-N-1	13.33	6.78	ND	6.55	ND	ND	ND
MW-N-2	12.74	4.91	ND	7.83	ND	ND	ND
MW-N-3	14.68	8.20	ND	6.48	ND	ND	ND
MW-O	16.80	11.79	ND	5.01	ND	ND	34.7
ACMW-1	12.56	6.55	ND	6.01	ND	ND	ND
ACMW-3	15.58	9.64	ND	5.94	ND	ND	ND
ACMW-4	14.97	8.92	ND	6.05	ND	ND	ND
DMW-2	15.40	11.57	ND	3.83	ND	ND	ND
MW-20	16.34	10.00	ND	6.34	ND	ND	1.6
MW-22A	11.62	5.35	ND	6.27	ND	ND	ND
MW-36	15.42	11.17	ND	4.25	ND	ND	ND

NOTE:

NM = Not Measured

ND = Not Detected

NA = Not Available

msl = Mean Sea Level

\*MW-E inaccessible - underneath large amount of construction materials



Table II  
Ground Water Elevations  
April 18, 2005  
Celotex - Edgewater, New Jersey

Well No.	Top of Inner Casing Elevation (ft-msl)	Depth to Water from Top of Inner Casing (ft)	Depth to Product from Top of Inner Casing (ft)	Ground Water Elevation (ft-msl)	Product Elevation (ft-msl)	Product Thickness (ft)	PID Reading (ppm)
MW-A-1	17.43	10.85	ND	6.58	ND	ND	1.4
MW-A-2	18.66	12.23	ND	6.43	ND	ND	ND
MW-B	16.67	10.31	ND	6.36	ND	ND	34
MW-C	16.06	12.79	ND	3.27	ND	ND	3.1
MW-D	16.55	10.36	ND	6.19	ND	ND	ND
MW-E*	16.48	NA	ND	NA	NA	NA	NA
MW-F	12.58	10.02	ND	2.56	ND	ND	1.8
MW-G	15.14	9.33	ND	5.81	ND	ND	ND
MW-H	19.36	13.15	ND	6.21	ND	ND	ND
MW-I	20.39	17.01	ND	3.38	ND	ND	ND
MW-J	17.54	14.36	ND	3.18	ND	ND	ND
MW-K	15.19	11.31	ND	3.88	ND	ND	ND
MW-L	16.38	9.69	ND	6.69	ND	ND	ND
MW-M	16.82	10.54	ND	6.28	ND	ND	1.2
MW-N-1	13.33	6.73	ND	6.60	ND	ND	1.4
MW-N-2	12.74	5.46	ND	7.28	ND	ND	0.5
MW-N-3	14.68	8.10	ND	6.58	ND	ND	3.6
MW-O	16.80	11.84	ND	4.96	ND	ND	50.7
ACMW-1	12.56	6.48	ND	6.08	ND	ND	0.5
ACMW-3	15.58	9.51	ND	6.07	ND	ND	ND
ACMW-4	14.97	8.79	ND	6.18	ND	ND	0.2
DMW-2	15.40	11.39	ND	4.01	ND	ND	ND
MW-20	16.34	9.96	ND	6.38	ND	ND	ND
MW-22A	11.62	5.24	ND	6.38	ND	ND	0.2
MW-36	15.42	11.03	ND	4.39	ND	ND	ND

NOTE:

NM = Not Measured

ND = Not Detected

NA = Not Available

msl = Mean Sea Level

\*MW-E inaccessible - underneath large amount of construction materials

**Table III**  
**Ground Water Sampling Measurements and Calculations - Low Flow Purging**  
**March 2005 Sampling Event**

Sampling Date: 3/15 - 3/16/2005

Site Name/Location: Celotex, Edgewater, NJ

Rev. 06/03

PRE-PURGE INFORMATION							PURGING INFORMATION							INITIAL PURGE PARAMETERS									
Well Number	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate (ml/m)	Total Purge Vol. (gal)	Temp (°C)	pH (s.u.)	Km mS/cm	D.O. (ppm)	ORP (mv)	Turb (NTU)	Sal (%)	Water Conditions/Comments		
MW-B	11:02	18.82	10.18	ND	ND	ND	bladder	teflon	15.0	11:02	11:27	200	1.3	11.83	5.91	2.72	2.58	108	48.3	NA	Slightly cloudy changing to v. slightly cloudy		
MW-20	11:45	19.30	9.91	1.6	ND	ND	bladder	teflon	14.0	11:45	12:17	150	1.3	12	6.06	14.2	4.21	37	31.9	NA	Cloudy changing to v. slightly cloudy		
MW-C	12:40	19.05	12.62	1.2	ND	ND	bladder	teflon	16.0	12:40	13:30	100	1.3	12.25	6.44	11.1	2.51	-116	21.6	NA	Very slightly silty, odor		
MW-N-3	14:27	59.30	8.00	ND	ND	ND	bladder	teflon	55.0	14:27	15:15	125	1.6	14.33	11.43	1.75	5.01	-56	11.1	NA	Clear		
MW-O	09:03	19.52	11.76	34.7	ND	ND	bladder	teflon	16.0	09:03	09:53	175	2.3	9.1	5.92	3.57	6.01	132	14.4	NA	Slightly silty changing to clear, slight odor.		

FINAL 3 READINGS																										
Well: MW-B									Well: MW-20									Well: MW-C								
Sample Start Time: 11:23 Finish: 11:27									Sample Start Time: 12:10 Finish: 12:17									Sample Start Time: 13:11 Finish: 13:30								
Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal	Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal	Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal
11:14	10.30	11.85	5.25	2.76	0	116	24.6	NA	11:59	10.10	12.32	6.3	14.3	0	20	25.1	NA	13:00	12.70	12.25	6.46	11	0	-119	20.8	NA
11:18	10.30	11.88	5.24	2.77	0	118	23.3	NA	12:04	10.10	12.51	6.35	14.2	0	19	24.8	NA	13:05	12.70	12.38	6.46	11.1	0	-120	20.1	NA
11:22	10.30	11.91	5.25	2.77	0	119	24	NA	12:09	10.10	12.59	6.36	14	0	18	24.5	NA	13:10	12.70	12.45	6.45	11.1	0	-121	19.7	NA

Well: MW-N-3									Well: MW-O								
Sample Start Time: 15:06 Finish: 15:15									Sample Start Time: 09:48 Finish: 09:53								
Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal	Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal
14:55	8.48	14.22	5.83	4.24	1.01	154	4.8	NA	9:37	11.90	9.45	6.9	3.42	0	65	1.3	NA
15:00	8.49	14.25	5.8	4.26	0.99	156	5	NA	9:42	11.90	9.45	6.93	3.43	0	62	1.4	NA
15:05	8.49	14	5.8	4.25	0.98	158	4.9	NA	9:47	11.91	9.46	6.95	3.45	0	60	1.3	NA

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh.  
Kc = Temperature-Compensated Conductivity to 25°C using the formula: Kc = Measured Cond (Km) x C/(1+(0.02)(Temp - 25)); C = cell constant.  
Turbidity readings are field screening data measured with rental meter; TRC is not certified in New Jersey for this parameter.

NJDEP Certification No. 07734

Reviewed & Approved by: \_\_\_\_\_  
Laboratory Manager or Designated Supervisor

TRC Raviv Meter Numbers				Cell Constant	Rental Meter
pH: --	Cond: --	D.O.: --		--	Name: Horiba U-22
ORP: --					Serial No.: 01531

**Table III**  
**Ground Water Sampling Measurements and Calculations - Low Flow Purging**  
**April 2005 Sampling Event**

Sampling Date: 4/18 - 4/19/05

Site Name/Location: Celotex, Edgewater, NJ

Rev. 01/05

PRE-PURGE INFORMATION							PURGING INFORMATION							INITIAL PURGE PARAMETERS									
Well Number	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate (ml/m)	Total Purge Vol. (gal)	Temp (°C)	pH (s.u.)	Km mS/cm	D.O. (ppm)	ORP (mv)	Turb (NTU)	Sal (%)	Water Conditions/Comments		
MW-N-3	11:10	59.3	8.04	3.6	ND	ND	bladder	teflon	55	11:10	12:09	150	2.3	16.06	10.48	0.532	4	-11	53.6	0	yellow, slightly translucent		
MW-20	12:47	19.3	10.00	ND	ND	ND	bladder	teflon	14	12:47	13:34	200	2.5	14.19	6.36	12.4	3	5	12.8	0.7	clear and colorless		
MW-C	13:51	19.05	12.81	3.1	ND	ND	bladder	teflon	16	13:51	14:21	150	1.2	14.85	6.54	5.12	2	-120	12.8	0.3	pale yellow and clear		
MW-B	14:52	18.82	10.27	34	ND	ND	bladder	teflon	15	14:52	15:24	200	1.7	15.82	5.99	2.94	3	80	20.9	0.1	clear and colorless		
MW-O	10:51	19.52	11.75	50.7	ND	ND	bladder	teflon	16	10:51	11:14	175	1.1	12.21	6.57	4.3	0	-67	6.7	0.2	clear and colorless		

FINAL 3 READINGS																										
Well: MW-N-3									Well: MW-20									Well: MW-C								
Sample Start Time: 12:01 Finish: 12:09									Sample Start Time: 13:24 Finish: 13:34									Sample Start Time: 14:13 Finish: 14:21								
Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal	Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal	Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal
11:55	8.34	16.37	5.98	5.28	0	67.00	77.4	0.3	13:18	10.12	14.16	6.36	11.6	3	17	12.8	0.7	14:04	12.85	15.41	6.56	4.95	0	-135	7.4	0.3
11:58	8.36	16.16	6.00	5.33	0	65.00	75.1	0.3	13:21	10.12	14.14	6.36	11.5	3	18	13	0.6	14:07	12.86	15.36	6.55	4.95	0	-135	8.2	0.3
12:01	8.36	16.19	6.02	5.39	0	63.00	77.4	0.3	13:24	10.12	14.19	6.35	11.4	3	20.00	13.1	0.6	14:10	12.86	15.34	6.55	4.98	0	-135	7.5	0.3

Well: MW-B									Well: MW-O																	
Sample Start Time: 15:14 Finish: 15:24									Sample Start Time: 11:05 Finish: 11:14																	
Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal	Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal	Time	DTW	Temp	pH	Km	D.O.	ORP	Turb	Sal
15:05	10.39	14.55	5.92	2.93	0	101.00	20.2	0.1	10:59	12.15	13.39	6.52	4.11	0	-48	0	0.2									
15:08	10.40	14.35	5.92	2.92	0	106.00	18.5	0.1	11:02	12.21	12.67	6.52	4.12	0	-47	0	0.2									
15:11	10.40	14.2	5.91	2.92	0	107.00	18.8	0.1	11:05	12.23	12.73	6.51	4.09	0	-43	0	0.2									

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).  
Kc = Temperature-Compensated Conductivity to 25°C using the formula: Kc = Measured Cond (Km) x C/(1+(0.02)(Temp - 25)); C = cell constant, if applicable.  
Turbidity readings are field screening data measured with rental meter; TRC Raviv is not certified in New Jersey for this parameter.

NJDEP Certification No. 07734

Reviewed & Approved by: \_\_\_\_\_  
Laboratory Manager or Designated Supervisor

TRC Raviv Meter Numbers			Cell Constant	Rental Meter
pH: _____	Cond: _____	D.O.: _____	_____	Name: Horiba U-22
				Serial No.: 05236

**Table IV**  
**Arsenic and Lead in Ground Water**  
**Celotex - Edgewater, NJ**

TRC Raviv Sample No.:	MW-B	MW-B (F)	MW-C	MW-C (F)	MW-N-3	MW-N-3 (F)	MW-N-3D	MW-N-3D (F)
Date Sampled:	03/15/05	03/15/05	03/15/05	03/15/05	03/15/05	03/15/05	03/15/05	03/15/05
Lab Sample No.:	02532-002	02532-009	02532-004	02532-011	02532-005	02532-012	02532-006	02532-013
Laboratory:	IAL	IAL	IAL	IAL	IAL	IAL	IAL	IAL

Metals (ppb)	Abbrev.	GWQS							
Arsenic	As	8	953	687	393	384	ND	ND	ND
Lead	Pb	10	6.41	5.4	13.3	ND	4.71	4.12	4.16

TRC Raviv Sample No.:	MW-O	MW-O (F)	MW-20	MW-20 (F)	FB031505	FB031505 (F)
Date Sampled:	03/16/05	03/16/05	03/15/05	03/15/05	03/15/05	03/15/05
Lab Sample No.:	02532-007	02532-014	02532-003	02532-010	02532-001	02532-008
Laboratory:	IAL	IAL	IAL	IAL	IAL	IAL

Metals (ppb)	Abbrev.	GWQS						
Arsenic	As	8	21.5	19.6	145	123	ND	ND
Lead	Pb	10	2.78	ND	4.02	ND	4.32	ND

(F) = Filtered sample  
 ND = Not Detected.  
 NA = Not Analyzed  
 GWQS = NJDEP's Ground Water Quality Standard.  
 Bold indicates concentration above GWQS.

**Table IV**  
**Arsenic and Lead in Ground Water**  
**Celotex - Edgewater, NJ**

TRC Raviv Sample No.:	MW-B	MW-B (F)	MW-C	MW-C (F)	MW-N-3	MW-N-3 (F)	MW-O	MW-O (F)
Date Sampled:	04/18/05	04/18/05	04/18/05	04/18/05	04/18/05	04/18/05	04/19/05	04/19/05
Lab Sample No.:	03691-006	03691-013	03691-005	03691-012	03691-002	03691-009	03691-007	03691-014
Laboratory:	IAL	IAL	IAL	IAL	IAL	IAL	IAL	IAL

Metals (ppb)	Abbrev.	GWQS								
Arsenic	As	8	<b>873</b>	<b>734</b>	<b>390</b>	<b>373</b>	ND	ND	<b>199</b>	<b>198</b>
Lead	Pb	10	ND	ND	ND	ND	ND	ND	ND	ND

TRC Raviv Sample No.:	MW-20A	MW-20A (F)	MW-20B	MW-20B (F)	FB031505	FB031505 (F)
Date Sampled:	04/18/05	04/18/05	04/18/05	04/18/05	04/18/05	04/18/05
Lab Sample No.:	03691-003	03691-010	03691-004	03691-011	03691-001	03691-008
Laboratory:	IAL	IAL	IAL	IAL	IAL	IAL

Metals (ppb)	Abbrev.	GWQS						
Arsenic	As	8	<b>84.7</b>	<b>77.3</b>	<b>88.4</b>	<b>77.5</b>	ND	ND
Lead	Pb	10	ND	ND	ND	ND	ND	ND

(F) = Filtered sample  
 ND = Not Detected.  
 NA = Not Analyzed  
 GWQS = NJDEP's Ground Water Quality Standard.  
 Bold indicates concentration above GWQS.

## APPENDICES

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## **APPENDIX A**

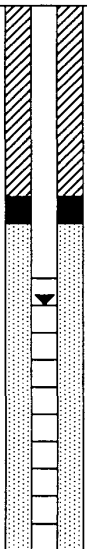
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**APPENDIX A**  
Monitoring Well Logs



<b>TRC RAVIV ASSOCIATES, INC.</b> 57 E. Willow Street, Millburn, NJ 07041 (973) 564-6006				<b>WELL LOG</b>		<b>WELL NUMBER</b> <b>MW-O</b>	
PROJECT NAME: Former Celotex				LOCATION: Edgewater, New Jersey		WELL PERMIT NUMBER 26-74023 Page 1 of 1	
PROJECT NO.: 01C2084				CONTRACTOR: Summit Drilling Co., Inc.		START DATE: 3/2/2005 FINISH DATE: 3/2/2005 DRILLER: Todd Naugle LOGGED BY: Mary Gwynn	
SAMPLER TYPE/DIA.: Split spoon/2"				TYPE OF WELL: Monitoring			
DEPTH TO BEDROCK: N/A				DRILLING METHOD: Air Rotary			
TOTAL DEPTH DRILLED: 20 ft				BIT TYPE: 8" roller bit			

DEPTH FROM SURFACE (FEET)	BLOW COUNT PER 6 IN.	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	WELL DIAGRAM	UNIFIED	LITHOLOGIC CLASSIFICATION AND COMMENTS
0					 <p>TD: 20 ft bgs</p>		0-3" Asphalt. Drilled to 2' due to hard zone.
2	7-20	17	ND			0-4" Fill: Black coarse gravel and asphalt pieces. Dry.	
4	26-27		ND			4-17" Fill: Brown f-m sand, trace silt, f-c gravel and cinders. Dense, dry.	
	15-15	12	ND			0-4" Fill: same as 4-17" of above interval.	
6	21-26		ND			4-12" Fill: Brown f-c sand w/ some silt, little f-c gravel. Med. dense, dry.	
	22-50/5	8	ND			0-8" Fill: same as 4-12" of above interval.	
8			ND			Drilled past hard zone 7-8'; cuttings consist of dense quartzite rock.	
	5-50/1	5	ND			0-5" Fill: same as 4-12" of 4-6' spoon. Moist.	
10			ND				
	10-23	11	10, 4			0-4" Fill: Gravel & concrete pieces. 4-7" Fill: Dk brown f-c sand w/a little f-c gravel, little silt. Loose, dry. 7-11" Fill: RB weathered sandstone pieces. Dry.	
12	18-50					0-4" Fill: Gravel & concrete pieces. Dry.	
	49-40	10	ND			4-10" Fill: pieces of competent wood, odor.	
14	5-8		ND			0-4" Fill: Black m-c sand. Loose, wet. Saturated with product, odor.	
	5-7	4	515				
16	12-30					0-1" Fill: same as 0-4" of above interval. 1-6" Fill: Dk brown/gray m-c sand, trace silt. Medium dense. 6-10" Fill: same as 0-4" of above interval.	
18	20-18	10	20			0-8" Fill: Dk gray/black f-c sand w/trace silt. Med. dense, wet. Band of coarser sand from 3-5" stained with product. 8-10" Fill: Lt. gray c sand. Loose, wet.	
	8-15	14	27, 30			10-14" Fill: Brown/gray f-c sand, trace silt, cinders & c gravel. Dense, wet.	
20	30-21		21				
22							
24							
26							
28							
30							

CASING TYPE/DIAMETER (IN.)		STATIC WATER LEVEL: 10.96 feet below TOC	
INNER: 4" PVC	OUTER: NA	DEPTH WATER ENCOUNTERED: 14 feet below surface	
SCREENED OR OPEN INTERVAL: 10-20 (FEET BELOW SURFACE)		MEASURING POINT ELEVATION (TOC): 16.80 feet above MSL	
		GROUND SURFACE ELEVATION: 17.09 feet above MSL	



**57 E. Willow Street, Millburn, NJ 07041 (973) 564-6006**

WELL NUMBER  
**MW-N-3**

Page 2 of 2

TD: 60 ft bgs

0-30' 10" Steel casing  
0-50' 6" Steel casing  
50-60' 6" Open-hole  
Flushmount with locking cap

305150

## APPENDIX B

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**APPENDIX B**

Monitoring Well Survey Form As, Bs

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: Edgewater Enterprises, LLC  
Name of Facility: Former Celotex Industrial Park  
Location: 1 River Road, Edgewater, New Jersey 07020  
Case No.: NJD981876642

**CERTIFICATION**

Well Permit Number: <u>2 6 - 7 4 0 0 8</u>	Owner's Well Number: <u>MW-N-3</u>
Well Completion Date: <u>02/28/05</u>	Lithologic Log: <u>Attached</u>
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	<u>-0.51</u>
Total Depth of Well to the nearest one-hundredth of a foot:	<u>59.30</u>
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	<u>49.30</u>
Screen Length (or length of open hole) in feet:	<u>10.00</u>
Screen or Slot Size:	<u>NA</u>
Screen or Slot Material:	<u>NA</u>
Casing Material: (PVC, Steel or Other-Specify):	<u>Open Hole</u>
Casing Diameter (inches):	<u>6</u>
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	<u>8.08</u>
Yield (gallons per minute):	<u>1.5</u>
Development Technique (specify):	<u>Air</u>
Length of Time Well is Developed/Pumped or Bailed:	<u>0 hour 35 Minutes</u>

**Authentication**

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

Peter L. Grogan  
Name (Type or Print)

Peter L. Grogan  
Signature

North Carolina - #1274  
Certification or License No.

Seal

Certification by Executive Officer or Duly Authorized Representative:

\_\_\_\_\_  
Name (Type or Print)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

**THIS FORM MUST BE COMPLETED BY THE PERMITTEE AND/OR  
SURVEYOR**

**Monitoring Well Certification – Form B Location Certification**

Name of Owner: Edgewater Enterprises, LLC

Name of Facility: Former Celotex Industrial Park

Location: Edgewater, N.J.

UST Registration Number: N/A

Case Number: N/A

ISRA Case Number: NJDE981876642

**LAND SURVEYOR'S CERTIFICATION**

Well Permit Number: 26-74008

This number must be permanently affixed to the well casing.

Longitude (to nearest second): 73° 59' 28"

Latitude (to nearest second): 40°48'23"

Elevation of top of Inner Casing (cap off)  
(to one hundredth of a foot): 14.68

Source & year of elevation datum  
NGVD 1929

Source: RM 465(FIRM)

Elevation:57.303

Source of Horizontal Datum NAD 1927 \_\_\_\_\_ 1983 approximated actual  
(If an alternate datum has been approved by the department, identify here, assume datum  
of 100' and give elevation)

Owners Well Number: MW-N-3  
(as shown on application or plans)

Elevations are to be determined by double run, three wire leveling methods balanced sights, commencing from a well marked and described point. This beginning point shall either be derived from federal or state benchmark if not more than 1000 feet from the site or from an alternate datum approved by the department. Tolerances should meet third order standards, which are 0.05 ft x (mile)<sup>1/2</sup>. For sections less than 0.1 mile, let miles = 0.1.

AUTHENTICATION

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Certified by:

**McCutcheon Associates, P.A.**



Donald J. McCutcheon  
President

License No. 16979

04-15-05



MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: Edgewater Enterprises, LLC  
Name of Facility: Former Celotex Industrial Park  
Location: 1 River Road, Edgewater, New Jersey 07020  
Case No.: NJD981876642

**CERTIFICATION**

Well Permit Number: <u>2 6 - 7 4 0 2 3</u>	Owner's Well Number: <u>MW-O</u>
Well Completion Date: <u>03/02/05</u>	Lithologic Log: <u>Attached</u>
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	<u>-0.29</u>
Total Depth of Well to the nearest one-hundredth of a foot:	<u>19.52</u>
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	<u>9.52</u>
Screen Length (or length of open hole) in feet:	<u>10.00</u>
Screen or Slot Size:	<u>0.008</u>
Screen or Slot Material:	<u>PVC</u>
Casing Material: (PVC, Steel or Other-Specify):	<u>PVC</u>
Casing Diameter (inches):	<u>4</u>
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	<u>10.96</u>
Yield (gallons per minute):	<u>1.0</u>
Development Technique (specify):	<u>Submersible Pump</u>
Length of Time Well is Developed/Pumped or Bailed:	<u>1 hour 0 Minutes</u>

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Technical Certification:

Peter L. Grogan  
Name (Type or Print)

Peter L. Grogan  
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North Carolina - #1274  
Certification or License No.

Seal

Certification by Executive Officer or Duly Authorized Representative:

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Name (Type or Print)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

**THIS FORM MUST BE COMPLETED BY THE PERMITTEE AND/OR  
SURVEYOR**

**Monitoring Well Certification – Form B Location Certification**

Name of Owner: Edgewater Enterprises, LLC

Name of Facility: Former Celotex Industrial Park

Location: Edgewater, NJ

UST Registration Number: N/A Case Number: N/A

ISRA Case Number: NJDE981876642

**LAND SURVEYOR'S CERTIFICATION**

Well Permit Number: 26-74023

This number must be permanently affixed to the well casing.

Longitude (to nearest second): 73° 59' 22"

Latitude (to nearest second): 40° 48' 19"

Elevation of top of Inner Casing (cap off)  
(to one hundredth of a foot): 16.80

Source & year of elevation datum NGVD 1929 Source: RM 465 (FIRM)

Elevation: 57.303

Source of Horizontal Datum NAD 1927 \_\_\_\_\_ 1983 approximated actual  
(If an alternate datum has been approved by the department, identify here, assume datum  
of 100' and give elevation)

Owners Well Number: MW-O  
(as shown on application or plans)

Elevations are to be determined by double run, three wire leveling methods balanced sights, commencing from a well marked and described point. This beginning point shall either be derived from federal or state benchmark if not more than 1000 feet from the site or from an alternate datum approved by the department. Tolerances should meet third order standards, which are 0.05 ft x (mile)<sup>1/2</sup>. For sections less than 0.1 mile, let miles = 0.1.

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**McCutcheon Associates, P.A.**



Donald J. McCutcheon  
President

License No. 16979

04-15-05

**THIS FORM MUST BE COMPLETED BY THE PERMITTEE AND/OR  
SURVEYOR**

**Monitoring Well Certification – Form B Location Certification**

Name of Owner: Edgewater Enterprises LLC

Name of Facility: Former Celotex Industrial Park

Location: Edgewater, NJ

UST Registration Number: N/A Case Number: N/A

ISRA Case Number: NJDE981876642

**LAND SURVEYOR'S CERTIFICATION**

Well Permit Number: 26-66222

This number must be permanently affixed to the well casing.

Longitude (to nearest second): 73° 59' 21"

Latitude (to nearest second): 40° 48' 19"

Elevation of top of Inner Casing (cap off)  
(to one hundredth of a foot): 16.06

Source & year of elevation datum NGVD 1929 Source: RM 465 (FIRM)

Elevation: 57.303

Source of Horizontal Datum NAD 1927 \_\_\_\_\_ 1983 approximated actual  
(If an alternate datum has been approved by the department, identify here, assume datum  
of 100' and give elevation)

Owners Well Number: MW-C  
(as shown on application or plans)

Elevations are to be determined by double run, three wire leveling methods balanced sights, commencing from a well marked and described point. This beginning point shall either be derived from federal or state benchmark if not more than 1000 feet from the site or from an alternate datum approved by the department. Tolerances should meet third order standards, which are  $0.05 \text{ ft} \times (\text{mile})^{1/2}$ . For sections less than 0.1 mile, let miles = 0.1.

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Donald J. McCutcheon  
President

License No. 16979

04-15-05

**THIS FORM MUST BE COMPLETED BY THE PERMITTEE AND/OR  
SURVEYOR**

**Monitoring Well Certification – Form B Location Certification**

Name of Owner: Edgewater Enterprises, LLC

Name of Facility: Former Celotex Industrial Park

Location: Edgewater, N.J.

UST Registration Number: N/A

Case Number: N/A

ISRA Case Number: NJDE981876642

**LAND SURVEYOR'S CERTIFICATION**

Well Permit Number: 26-48397

This number must be permanently affixed to the well casing.

Longitude (to nearest second): 73° 59' 24"

Latitude (to nearest second): 40°48'20"

Elevation of top of Inner Casing (cap off)  
(to one hundredth of a foot): 16.34

Source & year of elevation datum  
NGVD 1929

Source: RM 465(FIRM)

Elevation: 57.303

Source of Horizontal Datum NAD 1927 \_\_\_\_\_ 1983 approximated actual  
(If an alternate datum has been approved by the department, identify here, assume datum  
of 100' and give elevation)

Owners Well Number: MW-20  
(as shown on application or plans)

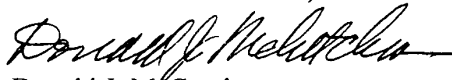
Elevations are to be determined by double run, three wire leveling methods balanced sights, commencing from a well marked and described point. This beginning point shall either be derived from federal or state benchmark if not more than 1000 feet from the site or from an alternate datum approved by the department. Tolerances should meet third order standards, which are 0.05 ft x (mile)<sup>1/2</sup>. For sections less than 0.1 mile, let miles = 0.1.

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Certified by:

**McCutcheon Associates, P.A.**



Donald J. McCutcheon

President

License No. 16979

04-15-05

**THIS FORM MUST BE COMPLETED BY THE PERMITTEE AND/OR  
SURVEYOR**

**Monitoring Well Certification – Form B Location Certification**

Name of Owner: Edgewater Enterprises LLC

Name of Facility: Former Celotex Industrial Park

Location: Edgewater, NJ

UST Registration Number: N/A Case Number: N/A

ISRA Case Number: NJDE981876642

**LAND SURVEYOR'S CERTIFICATION**

Well Permit Number: 26-48399

This number must be permanently affixed to the well casing.

Longitude (to nearest second): 73° 59' 24"

Latitude (to nearest second): 40° 48' 24"

Elevation of top of Inner Casing (cap off)  
(to one hundredth of a foot): 11.62

Source & year of elevation datum NGVD 1929 Source: RM 465 (FIRM)

Elevation: 57.303

Source of Horizontal Datum NAD 1927 \_\_\_\_\_ 1983 approximated actual  
(If an alternate datum has been approved by the department, identify here, assume datum  
of 100' and give elevation)

Owners Well Number: MW-22A  
(as shown on application or plans)

Elevations are to be determined by double run, three wire leveling methods balanced sights, commencing from a well marked and described point. This beginning point shall either be derived from federal or state benchmark if not more than 1000 feet from the site or from an alternate datum approved by the department. Tolerances should meet third order standards, which are 0.05 ft x (mile)<sup>1/2</sup>. For sections less than 0.1 mile, let miles = 0.1.



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Donald J. McCutcheon

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04-15-05